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Urban Farmers Handbook

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Urban Farming in Nairobi video

URBAN FARMERS

HANDBOOK

THE AGA KHAN UNIVERSITY

THE EAST AFRICA INSTITUTE

FOREWORD

In 2008, more than half of the global population, 3.3 billion lived in cities, making our kind, for the first time, *Homo urbanus* – an urban species. By 2030, 5 billion people will live in cities.

Urbanization has its challenges, especially in the developing world. Hunger and malnutrition are marching on our cities. A recent study showed that 44 percent of households in Nairobi were under nourished. In May 2012, the Ministry of Special Programs, distributed 4,800 bags of rice and soya and another 400 tins of cooking oil to poor households Nairobi, where it was estimated that 65% were food insecure.

But urbanism also presents a unique opportunity and the developing world is seizing it. In Kenya, the government and residents of Nairobi have passed a law that promotes and regulates agriculture. For the first time in the 115 years since Nairobi was founded as a railway beachhead, agriculture is now recognized as a legitimate land use, just like residential use.

This handbook is really about creating an excitement among urban residents on the possibility of providing sufficient food for their families and their community. Examples from other cities, such as Havana and Vancouver are inspiring and demonstrate that urban farmers can nourish cities and make decent living.

This handbook draws from and celebrates the courage and obstinate persistence of Francis Wachira, one of Kenya's most successful urban farmers. Francis a pioneer, leader, a mentor and role model embodies the spirit and promise of a new dawn of urbanization, one that recognizes the vital role of food urban farmers. We all can and must learn from Francis' leadership.

Alex O. Awiti, *PhD*

Director, East African Institute of Aga Khan University

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63.5% of youth feel their most urgent concern is

UNEMPLOYMENT

Yet only 11.4% of youth believe that farming will be a

VIABLE CAREER OPTION

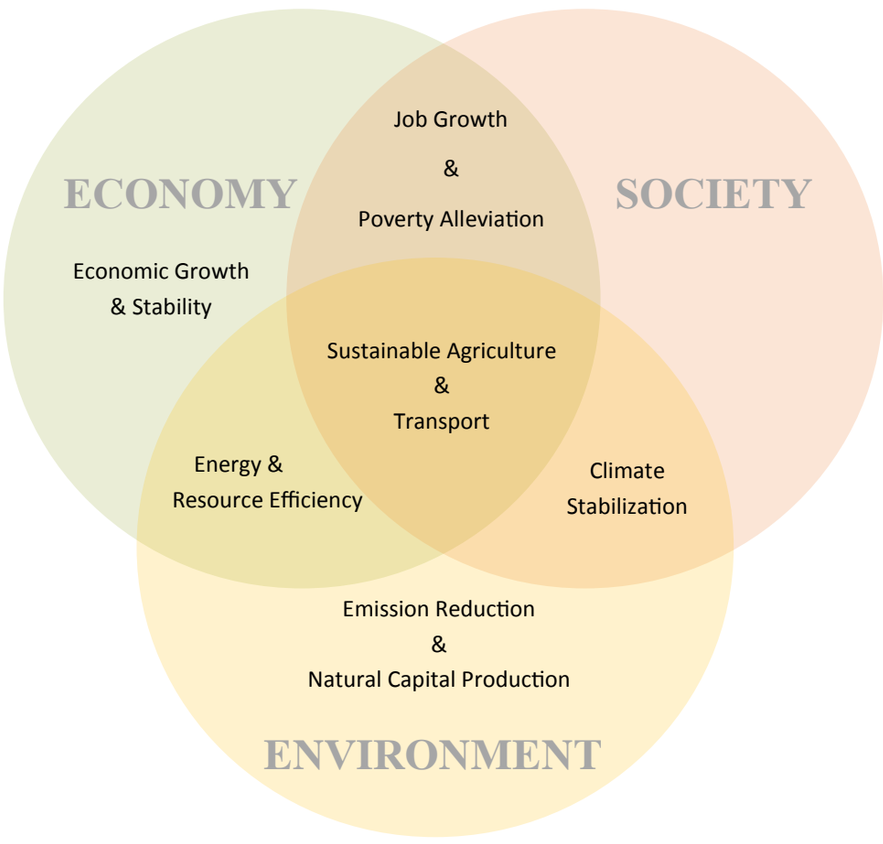
WHAT

Urban Agriculture is the raising, cultivating, processing, marketing, and distributing of food and food-based products in a town, city, or metropolitan area. Over the last decade or so, urban agriculture has grown extensively and has begun addressing issues related to income inequality, nutrition, and the rapid development of our cities. It aids in closing the gap between people and their food, allowing more consumer involvement beyond just purchasing.

The new *Nairobi City County Urban Agriculture Promotion and Regulation Bill* seeks to integrate urban agriculture land use strategies into county planning. It also provides increased extension services and the regulates environmental and community health impacts. Nairobi is at a tipping point, allowing the urban agriculture industry to expand to new heights. The following Urban Agriculture Handbook provides further information on how you can engage in your own urban agriculture enterprise and become a part of the growing movement to make Nairobi a global icon for food system sustainability.

WHY

The need for innovative farming practices increases with the slowing of economic activity. This economic decline, coupled with the 150% increase in staple food prices in Nairobi's informal markets, has left much to be desired. As a result, urban farming is becoming an viable business opportunity for urban entrepreneurs ready to take advantage of the demand for high quality, local food. Urban farms are proving to be an effective model for finding value in under-utilized spaces, and families who are engaging in urban agriculture practices within these spaces are often able to obtain an affordable, safe, clean, and sustainable food supply that promotes savings, employment, and with good agriculture practices, income generation.



GUINEA PIGS

Guinea pigs have been identified as a viable source of protein in Africa and they are gaining recognition as a healthier protein alternative than traditional sources. The guinea pig, also known as a Cavy, are from the rabbit family. They are wholly vegetarian with a similar diet to that of a rabbit, which makes them healthy animals with a good immune system that is resistant to diseases. Guinea pigs' adaptability, in addition to their affordable cost, suggests that they may be the next step for urban agriculture within East Africa.

KIKOKO ENTERPRISES

FRANCIS WACHIRA

Kiroko Enterprises, a farm in Nairobi's Makadara constituency shows how urban farming can contribute to its surrounding community, the economy, and promote healthy environmental practices. This organic farm, founded by the *Rabbit King* himself, Francis Wachira, faced many challenges in its creation. He was introduced to the idea by Ruai Breeder's Association and bought his first goat at KSh 15000. Using his goat, he supplied milk to the community and sold it at a cheap price, that is, KSh 50 per litre in order to get people to embrace the idea of drinking goats milk. The story was later picked up by the media and his project began to gain popularity. In 2014, he even took his goats to the Nairobi Trade Fair.

Mr. Wachira's story is one of persistence. He used community engagement to slowly change common perceptions of what a farm could look like. Now he is operating a successful urban farm with dairy goats, guinnea pigs, chickens, rabbits, and a variety of fresh produce. Mr. Wachira is also implementing techniques like water harvesting, waste management, and nutrient cycling, as well as specific growing techniques to boost production while managing difficult environmental elements. Learning from experienced farmers like Mr. Wachira is a good way to start off an urban farming project for yourself.

STARTING YOUR FARM

A FARMER STARTING AN URBAN AGRICULTURE PROJECT SHOULD FIRST CONSIDER THE 4PS

1. Purpose

What do you want to grow?

What type of urban agriculture method are you looking to use?

Will your farm be family-based or community-based?

2. Plan

Do you have any special skills that you will be putting to use at your farm?

Do you need any financial assistance?

How large of an urban farm are you able to manage?

Are the weather conditions suitable for animals or produce?

Is there access to water? Or will flooding be a problem?

3. Product

Do you want to grow multiple products or focus on one specific item?

Will your farm products be for personal consumption or for sale?

Do you hope to generate a profit from your products?

4. People

Who will be buying your products?

What are your possible market outlets if goods are for sale?

Will you need guidance from others or will you start this project alone?

LIVESTOCK

Though there are many options for livestock keeping in an urban setting, we will be recommending the use of rabbits and dairy goats. These animals have their own set of challenges, but are complimentary to an urban farming system. They are relatively small in size, making them manageable for limited space conditions, and do not require a lot of capital to start farming. With the right conditions, production and sale of fresh farm products can begin quickly.

DAIRY GOATS

The rapid development of cities has led to an increase in people and a reduction in space. This has made dairy goats more desirable than larger live stock, like cows, within an urban setting. In addition to their smaller size and need for minimally-sized pens, goats produce less waste than cattle. The cost of production is also cut in half when comparing a goat to a cow. Goat milk is high in calcium, phosphorus, chlorine, and vitamin B1 – it is easily digestible, low in sugar, and has a low cholesterol content, making the milk so nutritious that it is actually sold to people with HIV to boost their immune systems.

AVERAGE COSTS AND INCOME OF OWNING DAIRY GOATS	
PRODUCT	**COST/INCOME**
Mature Goat	15,000—30,000 KSh
Goat Feed	300—500 KSh per day
Milk (1 Litre)	200 KSh
Yogurt (1 Litre)	300—400 KSh
Fertilizer (1 Large Bag)	10,000 KSh

An average day managing dairy goats would require several steps. Firstly, goats need to be fed once in the morning and once in the evening. Dairy goats can consume a wide variety of weeds and grasses, as well as vegetables and leaves. Additional feed, such as daily meal, maize germ, and salt feed can all be purchased from the local Agro-vet. Caution should be taken if the goats are fed herbs, however, as herbs should not exceed 25% of their diet and must be wilted before feeding. Substituting items like neem, avocado leaves, bean leaves, and maize cob into their diet will help to keep your goat's immune system strong. To prevent the goats from catching pneumonia their pen should always remain clean and dry. Dairy goats can be milked once or twice a day based on need.

There are challenges with dairy goats, however, which include the possibility of inbreeding within the purchased herd. This can lead to animals that are more prone to disease and infection. Purchasing from a trusted breeder can prevent this. There is also a lack of awareness surrounding the benefits of goat milk, but this is a challenge that can be handled through sharing the information found in this handbook.

SELECT

GOAT TIPS

The following tips will help you earn long-term profits by maintaining your dairy goats rather than selling them:

- When kids are born they may be fed a milk replacement so that the additional milk from their mothers can still be collected.
- A dairy goat has a production life span of 8-10 years and once it is done producing milk it may then be sold for meat.
- If goat milk is used to create items like ghee, yoghurt, or cheese then it will be considered more valuable and its price may be increased.
- Dairy goat waste is one of the most useful waste products if used properly. It can be used as fertilizer to grow other products within an urban farm or sold to other farmers who need an organic fertilizer substitute.

GOAT BREEDS AVAILABLE IN NAIROBI			
BREED	**MILK PRODUCTION**	**OFFSPRING**	**RATING**
German Alpine	1-2 Litres per day	2-4 Kids	Preferred overall breed for urban agriculture
Toggenburg	3-4 Litres per day	1-2 Kids	Requires excellent care for maximum results
Saneen	3-5 Litres per day	1 Kid	Produces the most milk, but lightest in nutrients

RABBIT KEEPING

To fulfill the demand of a growing population within Kenya, rabbit meat, has been identified as an alternative source of protein. It has potential to be a highly profitable source of income.

The rabbit's small size makes them one of the easiest animals to keep in an urban setting. They require little capital to start and minimal labor to upkeep once purchased. Rabbits do not need a lot of space – raised cages built upwards can be used with minimal space allowance, which is advantageous for people using small pieces of land. They have a rapid reproduction rate with a doe producing 12-15 kids per litter approximately 4 times a year. This allows for a consistent supply of meat if managed well. Rabbits are not only valuable for their meat either, but also for their skin, waste, fur, and urine. In fact, 1 litre of urine mixed with 5 litres of water can be used as an organic pesticide, and manure can be used as compost on your farm or for sale to other farmers to generate extra income.

The meat from your rabbits will be the most profitable product based on its numerous benefits. Rabbit meat is high in protein, calcium, and vitamins, which increases its nutrition levels while being low on cholesterol, sodium, and fat. These facts attract health conscious consumers looking for an alternative protein option. Rabbit meat also does not have any religious affiliation making it a great option for customers with a restricted diet.

AVERAGE COSTS AND INCOME OF OWNING RABBITS	
PRODUCT INFORMATION	**COST/INCOME**
Weight	2—3 kgs
Yield	1.0—1.5 kgs of meat
1 kg of meat	400 Shillings
1.5 kg of meat	600 Shillings
Production/Upkeep	250—300 Shillings per mature rabbit

An average day of rabbit keeping requires several important steps. Rabbits must be fed every day, but are capable of eating organic kitchen waste, greens, root vegetables, hay, grains, or pellets purchased from an Agro-vet. To keep your rabbits healthy their hutch should remain dry, facing away from the wind, and hold a constant supply of clean water. Each day upon inspection it should be noted if a rabbit has had any kits overnight. If so, newborn rabbits should be provided with a cotton box and should be closely monitored to ensure they are not malnourished. In extreme cases, other female rabbits may adopt the kits and provide them with a better chance of survival if the mother is incapable.

Rabbits come with their own set of challenges as they are prone to illnesses like pneumonia, diarrhea, and ear infections. This can lead to additional costs for medical supplies and treatments. However, there are preventative measures that may be taken to stop illnesses before they start. Rabbits should always be purchased from a trusted breeder to ensure that they are healthy to begin with. As a rabbit keeper you should be able to recognize if a rabbit has fallen ill. Symptoms to look out for are lack of appetite, discharge from eyes, mouth, nose, vent, tit, or anus, and irregular breathing, swelling, sores or irregular growths, and difficulty moving. If any of these symptoms are recognized the sick rabbit should be removed from the rest of the herd until the symptoms have cleared and the rabbit is well again.

CROPS FOR YOUR FARM

COMMONLY GROWN ON URBAN FARMS

FRUITS

MANGOES | STRAWBERRIES

VEGETABLES

AVOCADO | BEETROOT | BLACK PEAS | CANOLA | CARROTS

CASSAVA | CELERY | NEEM | PEPPER | PUMPKIN | SQUASH

SOFT LETTUCE | SPINACH | SWEET POTATOES | RADISH

HERBS & MEDICINAL

ALOE VERA | BASIL | LEEKS | LEMON GRASS

SAGE | SUGAR CANE | SUNFLOWER

LEGUMES & GRAINS

CLIMBING BEAN | LEUCAENA | MAIZE | WHEAT

FEED

LEOPARD GRASS | SORGHUM | TITHONIA

AGRICULTURE

Urban Agriculture often refers to the cultivation of fruits, vegetables, and herbs for home consumption and/or commercial purposes within cities and metropolitan areas. As the population of Kenya grows, and the price of local market produce increases, so does the demand for fresh local fruits, vegetables, and herbs sold at reasonable prices. Currently, agriculture is one of the fastest growing sectors within Kenya, and Mr. Wachira's organic farm, **Kiroko Enterprises**, is proof that anyone is capable of growing produce in even the smallest of places.

Kenya has rich volcanic soils, which provide quality nutrients for the successful growth of fresh produce. The use of organic fertilizers will also help the soil to stay nutrient-rich for longer. The hot climate is favorable for growing tropical crops, while the cool, wet climates promote the growth of more temperate crops, like apples and grapes. This allows for shifts in the type of produce grown depending on the time of year.

A few of the challenges to prepare yourself for when growing your own crops are the presence of pests, the difficulties with refrigeration, and the flooding that may occur during the rainy season. Pests can destroy crops, but by using organic pesticides like rabbit urine, peri-peri, or neem they can be prevented without damaging the produce. If you do not have access to a refrigeration facility, there will be more pressure to sell fruits and vegetables immediately because they will spoil faster.

During the rainy season flooding may also destroy crops and make roads inaccessible. This will make it difficult for consumers to reach your urban farm and difficult for you to transport your products to market. The rainy season should be prepared for by planning alternate travel routes and appropriate crop placement.

With a mixture of soil and compost, agriculture can be done in regular ground level gardens, but here are some alternate options if you have limited space:

- A moist bed is a 2 ft. deep and 2 ft. wide structure made of polythene fiber material. This material retains moisture that crops need and can be used in dry climate to grow produce.

- Roof top beds and multi-story gardens are options for those who do not have a lot of ground space. They have a wood frame with a polythene fiber base and walls that can be built off the ground. By using this structure, produce can then be grown within polythene or old cloth bags hung from a frame or wall.

MARKETING & EXTENSION SERVICES

Once your urban farm is operational the next step is incorporating a marketing strategy to help generate income. Prospective markets for your products include: family, friends, neighbors, schools, hotels, and other farmers. Some products may not be commonly eaten or consumed within your community. In that case, it is necessary to promote awareness of the benefits of the products you are selling. Transportation and the distribution of produce and food-related products is diverse, as it can range from the sale of products located at your own farm, to the use of delivery people, transporting your products to local markets on motorcycles or even handcarts!

Additionally, you are not alone in your pursuit of a successful urban farm. There are many extension services now in place to support urban agriculture within Kenya. Here are several resources that can provide you with further information and guidance should you need it:

FARMSHOP (Kenya)

- **+254-714-772-853**
- **info@farmshop.co.ke**
- **https://farmshop.co.ke**

The Ministry of Agriculture, Livestock, and Fisheries

- **+254-202-718-870**
- **http://www.kilimo.go.ke/agriculture/**

The Nairobi City County Urban Agriculture Promotion and Regulation Bill 2015 (Mkulima Young)

- **+254-710-848-002**
- **http://www.mkulimayoung.co.ke/resource**

M-Farm

- **+254-707-933-993**
- **info@mfarm.co.ke**
- **https://mfarm.co.ke/blog**

Field Days

- **Gatherings within the city to promote exchanging of information between farmers**

Mazingira and Nairobi and Environs Food Security, Agriculture, and Livestock Forum (NEFSALF)

- **http://blogs.worldwatch.org/nourishingtheplanet/mazingira-institute-and-nefsalf-training-a-new-breed-of-farmers-africa-agriculture-farmers-hunger-kenya-mazingira-institute-environs-food-security-agriculture-and-livestock-forum-nefsalf-urban-harvest/**
- **Community of more than 700 farmers all sharing their skills to create better products**

More information on Francis Wachira and his urban farming success

- **http://www.akfc.ca/en/about-us/item/190-meet-the-rabbit-king/190-meet-the-rabbit-king**

Educating for leadership must imply something more than the mere development of rote skills. In a world of rapid change, an agile and adaptable mind, a pragmatic and co-operative temperament, a strong ethical orientation – these are increasingly the keys to effective leadership. And I would add to this list a capacity for intellectual humility, which keeps one's mind constantly open to a variety of viewpoints and which welcomes pluralistic exchange. These capacities over the longer term, will be critically important to the developing world.

–

His Highness the Aga Khan

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